

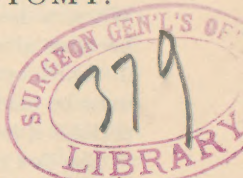
Baldy. (J. M.)

Exploratory laparotomy



EXPLORATORY LAPAROTOMY.

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By J. M. BALDY, M.D.,
OF PHILADELPHIA.



THE whole subject of exploratory laparotomy is daily assuming such increasing importance that it is becoming necessary to have some exact data from which to judge of the propriety of this procedure. There is little doubt in the minds of most operating surgeons as to the importance of a complete and intelligent exploration of the abdominal cavity in all cases of obscure abdominal troubles of a serious character, which threaten life, and which refuse, within a safe amount of time, to yield to medicinal treatment. The active hostility to operative procedures about the abdomen comes, in great part, from so-called surgeons, men who have either had little or no practical experience in these matters, or who have had some very unfortunate results. Again, a quiet but determined opposition is often to be found amongst physicians. It is hard for these gentlemen to overcome the dread of interference with the peritoneal cavity, a dread which has been so thoroughly instilled into the professional mind that it will take, I fear, many years of patient work to overcome it.

Even in cases in which the diagnosis is easily made, and in which every moment lost is of the gravest importance, men still hang back from a surgical procedure, apparently in the hope that something almost supernatural will intervene to save the patient. Where a doubt rests on the diagnosis, this reluctance becomes almost a dread, and generally calls forth an ill-timed opposition, until eventually the operation must be made, only to be found to be too late, or perhaps it is not made at all.

The fact cannot be too constantly kept before the profession that an exact diagnosis in abdominal diseases is very often impossible. This is the expressed opinion of the great majority of abdominal surgeons to-day, and it is the exception to find one bold enough to claim otherwise. In the words of Thomas, "he who declares that he does not frequently err belongs to one of two classes: that of those who lack the intelligence to appreciate their shortcomings, or the courage to confess them, or to that of those who by *suppressio veri* or *suggestio falsi* are shortsighted enough to hope to deceive the community which watches their careers." When such men as Tait and Thomas boldly acknowledge our lack of diagnostic precision, it is time for us to lay off timidity and embrace every means at our command to overcome the difficulties of the situation.

If it were certain that a band was binding a loop of intestine down, and strangulating it, or that there was a purulent peritonitis, or one of a dozen other conditions present, even a physician would not hesitate to have the abdomen opened, and the strangu-

lation relieved, the peritoneal cavity washed out and drained, or whatever else might be found necessary. The risk to life which the operation itself might bring would be unhesitatingly accepted by any intelligent thinker, and would not have very much weight against an operation which offered such positive chances of relief and cure. But when a case is presented in which there is a very grave doubt as to the diagnosis, especially when the patient seems to be in pretty good general condition, and with the hope of something turning up constantly leading one on, the temptation to wait becomes great. This is the more so because there is a decided feeling of uncertainty in the minds of the profession at large, excluding operating surgeons of experience, as to the amount of risk to life the patient will be exposed to from an operation *per se*, provided nothing of a dangerous character be found to exist after the operation has been made.

It is with the hope of adding something to the literature of the subject, which may at least be a beginning toward a final settlement of this question of danger, that I have collated the following statistics.

I am fully awake to the fact that conclusions drawn from statistics are often misleading, and can at best be but approximate; and yet withal they have their place and serve their object. I have been at some considerable trouble to make this list as reliable as possible, but realize that some errors have probably crept in, and that some cases must have been included which should not have been. However, I

do not think there are enough of them materially to alter the results. I have not used any journal cases, excepting in such instances as the operator has directly referred me to them. I have excluded all such for the obvious reason that the case might be only one of many done by the same operator, and it would be manifestly unfair to include his favorable and not his unfavorable ones, or *vice versa*. All cases used have been those of American surgeons; they have been obtained directly from the operator himself, and presumably include all such operations done by him during the past five years. Such cases only as have had the abdominal cavity opened and no operation or extensive separation of adhesions done inside the peritoneal sac, whether the diagnosis had been made before the operation or not, have been admitted, so far as I have been able to judge. Cases of simple irrigation or drainage have been included for the reason that they are often almost of necessity part of an exploratory operation, and do not complicate it to any great degree.

A careful analysis of the list develops many interesting features. There are in all 154 cases, representing the work of 46 operators, many of whom will be recognized as men of prominence. As reported, the list is classified as follows:

	Cases.
Carcinoma	3
Papilloma	5
Malignant	8
Sarcoma	12
Cancer	33
Pregnancy	3

	Cases.
Peritonitis, acute, chronic, suppurative	11
Peritonitis, tubercular	17
Uterine fibroids	16
Diseases of the uterine appendages	10
Diseases of the liver, gall-bladder, and their ducts	9
Cysts of kidney	2
Pelvic or iliac tumors	8
Pelvic abscess	2
Purulent fluid in peritoneal cavity	2
Abscess of ovary	1
Suppurating sinus	1
Cellulitis of broad ligament	1
Perimetritis	1
Acute micrococcal development	1
Hyperæmia of the pelvic peritoneum	1
No disease found	3
Penetrating stab-wound of abdominal wall	2
Penetrating gunshot wound of abdominal wall	1
Not stated	1

The total number of deaths is 25, making the general mortality somewhat over 16 per cent. At first sight this death-rate is appalling, and would naturally stop all talk of exploratory operations, but when we come to analyze further the deaths and their causes, this will be considerably modified. The list is considered in two divisions; malignant, 61 cases; and non-malignant, 93 cases.

Among the malignant cases age does not seem to have differed more than in malignant disease in other parts of the body. The mortality between the ages of twenty and thirty years is over 33 per cent.; from thirty to forty it drops to almost 19 per cent.; but between forty and fifty it again rises to over 33 per cent., only to drop back to 18 per

cent. between fifty and sixty. Of the 55 recorded cases, 40 occurred between the ages of thirty and sixty years. The extremes were five and seventy-four years.

Of the 87 recorded cases of non-malignant disease, 71 occurred between the ages of twenty and fifty years, with a mortality ranging from 6 to 16 per cent. The mortality of those from one to ten, and above sixty years of age is from 50 to 100 per cent. I take it that these results are not very far from those of any other major operation.

The number of females far exceed those of males; the mortality amongst the males is, however, very much the highest. There are 61 recorded malignant cases; of these, 57 are females and 4 males. The female mortality is over 21 per cent., the male is 50 per cent. Of 93 recorded non-malignant, 83 are females and 10 are males; the female mortality is over 8 per cent., the male is 40 per cent.

At the time of the operation the condition of the patients varied greatly. Of 33 recorded malignant cases, 7 were in good or fair condition, 19 in bad, and 7 in very bad; of 76 recorded non-malignant cases, 25 were in fair or good, 34 in bad, and 17 in very bad condition.

The length of time that the disease had existed before the operation was in 32 recorded malignant cases, under one month, 1; from one month to a year, 23; over one year, 8. Of 62 non-malignant, 11 had existed under one month, 25 from one month to a year, and 26 over a year.

Of 32 recorded cases of malignant disease which recovered from the operation, 2 lived under one month, 15 from one to six months, 15 over six months; of 61 non-malignant, 2 lived under one month, 9 from one to six months, and 50 more than six months.

An analysis of the effects of the operation on the condition requiring it presents some very remarkable facts. 27 malignant and 52 non-malignant cases are recorded. Of the malignant, there was more or less improvement in 14, and no improvement in 13 cases; of the non-malignant, there was no improvement in 12, but there was improvement in 40 cases. The change for the better in some of these amounted to an absolute cure, and in many others it was very great, as well as permanent. This is all the more remarkable when it is remembered that nothing could be done for the patient's relief after the abdomen had been opened, but the wound had been closed with everything left as it had been found. This bears Tait out well in the statement he made some years ago, that the mere handling of the abdominal contents seemed in many cases to give relief. The *modus operandi* is, I think, beyond explanation, but the bare fact still remains, to which I can personally bear testimony.

14 malignant and 11 non-malignant cases died. Of the malignant, 1 died within a day, and 13 from one to seven days; of the non-malignant, 3 died within a day, 6 from one to seven days, and 2 lived over a week. The causes of death in the malignant cases were:

	Cases.
Exhaustion	4
Peritonitis	2
Shock	1
Intestinal obstruction	1

with six cases unrecorded.

Of the non-malignant:

	Cases
Collapse	1
Shock	1
Tetanus	1
Peritonitis	2
Heart clot	1

with five unrecorded cases.

I have already stated that there were 25 deaths. If we examine these deaths we find that 14 of them were among the malignant cases, making a death-rate of 22 per cent. In other words, the mortality of the malignant is just twice as great as that of the non-malignant. Palmer has stated "that patients with internal cancer have little vitality and a small amount of shock is liable to shorten life, if not prove fatal." The results here obtained would seem to verify his statement.

Death in three of the malignant cases cannot be attributed to the operation, and probably if fuller particulars had been given in the other 11, most of them could be eliminated. As it stands, about 18 per cent. of these deaths were hastened by operation. Here, however, we must take into consideration that the death of all was only a matter of time, and possibly a very short time. The operation was left in most of them, as usual, until the last moment, and

when the condition of the patient was, as recorded above, either "bad" or "very bad" in 26 out of 33 cases.

A much more pleasing picture presents itself in many ways when we consider the non-malignant cases, but here, too, we find a lamentable lack of determination and pluck on the part of some one—either the patient or the physician. Had an operation been undertaken earlier most of the deaths could probably have been avoided. There are in all 11 deaths, a mortality of over 11 per cent. Of these, I think we can, in all fairness, eliminate seven from the list of those in which death was hastened by the operation, leaving four cases in which the death was either hastened or caused by the surgical interference, a mortality of over 4 per cent.

Of these 4, 1 was a case of perimetritis, which died in nine hours; 1, a case of tubercular peritonitis, which died in ten days of acute peritonitis; 1, a case of hobnail liver, which died in forty-eight hours of shock; the last 1, a case of uterine fibroma, which succumbed in ten days to tetanus. The following are the 7 cases which I would eliminate:

- 1, Purulent peritonitis (dying); death in a few hours.
- 2, General peritonitis (very low); death in five days.
- 3, General peritonitis (almost in collapse); death in two days.
- 4, Suppurative peritonitis (very bad); death in four days.
- 5, Ruptured tubal pregnancy (in collapse); death in twenty-four hours.
- 6, Turbid serum in peritoneum (almost moribund); death in four hours.
- 7, Solid tumor of liver; death in two days.

This last operation was performed as a last resort at the express desire of the friends.

The whole number of deaths hastened by operation, in both malignant and non-malignant disease, is 15, a death-rate of 9 per cent.

There are 16 cases of uterine fibromata with only 1 death, and this from a cause which is as likely to complicate any other surgical procedure as the one under consideration. Furthermore, the prevention of tetanus is, as far as we know, entirely beyond our control. An operation to remove the ovaries or the tumor itself in the case of a uterine fibroma, which results in being able to do nothing, is probably as typical a case of exploratory laparotomy, in its results, as we can cite in judging of the danger of exploration. Another class which is just as typical and which occurs frequently, is disease of the uterine appendages. There are ten cases of this disease without a death. In fact, it seems to make little difference in this class whether the disease is removed or simply explored; one can be done with almost as much impunity as the other.

The penetrating wounds, 3 in number, all made good recoveries.

8 pelvic or iliac tumors, which could not be differentiated, all got well, as did also 2 of the 3 cases of pregnancy. The third was a ruptured tubal pregnancy, and the patient was almost dead when operated on. The 2 cases which recovered both aborted. 22 per cent. of the diseases of the liver, gall-bladder, and their ducts succumbed to the oper-

ation. I can only explain this on the ground of late operation.

The cases of peritonitis are among the most interesting and instructive on the list. I find 2 of chronic, 6 of general acute, and 3 of suppurative peritonitis, a total of 11 cases, with 4 deaths. 2 of these deaths were from suppurative and 2 from general acute peritonitis. 36 per cent. is a very large mortality, but the great death-rate of this disease where no operative interference has been practised must be remembered as well as the fact that all 4 deaths were almost certain at the time of operation, and would undoubtedly have occurred in any event. It is only another warning against the dangers of an expectant treatment in abdominal troubles. If we wait, and operate, as has been the custom too often, only as a last resort, we can never expect to render our results better than they have been in the past.

Probably the most remarkable class here recorded is that of tubercular peritonitis. In a paper read before this Society last year, a case of tubercular peritonitis was reported, where the abdomen had been opened and death had followed. In commenting on that case, the reporter, on that occasion, a prominent physician of this city, said: "Incision should be avoided in tubercular peritonitis, unless the inflammation is purulent. Not only so, but where the tubercular process is present, even paracentesis should be practised only in those cases in which dyspnœa, from over-distention of the serous sac with fluid, threatens life. The danger of operative interference in tubercular inflammation of serous

sacs is that the inflammatory process nearly always becomes purulent." In the discussion which followed, operative interference was generally condemned for various reasons. These opinions I have found to be pretty general among medical men. The facts are a decided contradiction of this, however, and in view of our rapidly accumulating experience, this subject will have to be very carefully reconsidered. Kussmaul reported 30 collected cases of operations on this disease to a recent Congress of German Surgeons. During the discussion of his paper 6 additional cases were reported, making a total of 36. There were in all 6 deaths, 4 of which were from general tuberculosis, and 2 were attributable to the operation. Many of the cases were encysted, and most of the patients were operated on under the supposition that there was an ovarian tumor or other cystic trouble present. I am now able to add 17 cases to this list, with but 1 death, the cause of death being general peritonitis. Thus we have a total of 53 cases with a death-rate of somewhat over 5 per cent. The 17 cases I have collected resemble in many respects those reported in Germany. They were for the most part cases of misdiagnosis or pure explorations for diagnosis. The manner in which they were dealt with varied. In some the ascitic fluid was simply evacuated, and the abdominal wound closed. In others a drainage-tube was inserted. Again, some were irrigated with water, or with water medicated with bichloride of mercury, and in still others iodoform was dusted into the peritoneal cavity. But there does not seem

to have been any better result from one line of treatment than from another. The simple opening of the serous sac, with the evacuation of the ascites, probably supplemented by drainage, appears to be as beneficial as any. It is interesting to note that the patients not only did not die from the operation, but most of them had more or less permanent relief. Of the 16 cases of recovery, 5 are reported as cured, 4 as much improved, 2 as improved, and 4 as having no return of the ascites. In but 1 case did the ascites reaccumulate, and still the patient was alive sixteen months after the operation. Some of the patients have now remained well sufficiently long for us to be able to speak of their recovery with certainty. The amount of time now passed since the operation has been in 1 case over three years, in 2 cases over two years, in 5 cases over one year, the others varying from three to six months. The condition of 13 of the patients at the time of operation was either "bad," "low," or "apparently dying." Four only were in good condition. The case of death is reported as being very low, and a point of probable interest is that it is the only male in the series. It would seem then that operative interference in tubercular peritonitis is not attended with the risks attributed to it; but, on the contrary, is in a great majority of cases positively beneficial. There is a decided growing opinion among surgeons as to the propriety of adopting operative measures for the relief of this disease. Only within the past few months this subject was discussed in England by Mr. Knaggs and his colleagues with the result of report-

ing a number of additional cases, and the whole discussion taking a turn favorable to a further trial of operation.

To recapitulate, we have here a total of 154 cases of exploratory laparotomy, with a death-rate of over 16 per cent. By eliminating such cases of death as were very evidently not due to the operation itself in any way, the mortality becomes somewhat over 9 per cent. If we throw out the malignant and consider only the non-malignant cases, we find a death-rate of over 4 per cent. I think it fair to ignore the malignant and judge only from the non-malignant cases, because the operation in cancer is almost always a late one.

Even the mortality of 4 per cent. which we give to the non-malignant patients, is deceptive. For instance, of the 4 deaths, 3 are reported as being "very low" at the time of operation, 1 case of perimetritis, 1 of tubercular peritonitis, and 1 of hobnail liver. So in reality, although the operation directly hastened death, it probably only did so on account of the bad condition the patients were in, and should, therefore, not be taken into account in judging of what would be the result in a case operated on early in the attack, and which was still in good condition. What surgeon would expect to lose a case of simple exploration, of a patient suffering from a hobnail liver, from shock, under ordinary circumstances? The fourth case died of tetanus. This case was one of uterine fibroma, and was in very poor general condition, having suffered from the disease for over ten years. It is the only

one I am inclined to give much importance to, and the only one which, after careful consideration, seems to me to have been a legitimate death from operation. Looking at the subject from this point of view, the death-rate falls at once to between one and two per cent., and this is, I think, about what it should be. Here is where Tait left it some years ago. In his first 1000 cases of abdominal section, he had 93 exploratory with 1 death, and even this death was in a broken-down woman of sixty years, who died really of prolonged sickness after the anæsthetic.

These tables, I must admit, at first sight do not show what I should wish them to. But by considering only the non-malignant cases and by a fair exclusion of such deaths as cannot in justice be attributed to the operation alone, the results are not very far from the truth. I do not personally think there is any considerable amount of danger attached to a simple exploration of the abdominal cavity. A general mortality of over 16 per cent. as here shown can only mean that most of the cases had been undertaken when the patients were in such a low condition that the slightest shock would turn the balance against them. This is only too well shown to be true by reference to the condition of the patients before operation, as reported in this list. There is altogether too much waiting and expecting. If there is sufficient abdominal trouble of an obscure nature, to endanger life, which will not yield in a reasonable time to the ordinary methods of treatment, do not wait until the patient is worn out and in a condition in which no one would attempt any

other major operation, but make a careful and complete exploration of the peritoneal cavity. It will be an exceptional case in which any harm will be done, and many an obscure case will be cleared up and many a life saved.

This line of treatment is growing more and more into favor with surgeons, and when the physician joins hands with the surgeon on this common ground the profession will no longer have to reproach itself for such a death-list as Treves reports for England, viz., over two thousand deaths every year from intestinal obstruction alone.

NOTE.—I wish to express my indebtedness to the following gentlemen for cases, many of which are as yet unpublished: Drs. William Goodell, 14; John Homans, 17; G. J. Englemann, 4; Paul F. Mundé, 3; H. P. C. Wilson, 4; W. W. Keen, 2; Henry O. Marcy, 8; C. D. Palmer, 5; R. B. Maury, 2; T. G. Morton, 3; R. S. Sutton, 1; Joseph Eastman, 1; Joseph Price, 7; Howard A. Kelly, 9; James B. Hunter, 6; John A. Wyeth, 3; R. F. Morris, 1; W. O. Werder, 1; William C. Wile, 1; John Scott, 1; Paolo De Vecchi, 1; George W. Porter, 2; W. B. Bontecou, 2; F. W. Rockwell, 1; J. R. Weist, 2; E. J. Beal, 1; Clinton Cushing, 4; T. A. McGau, 1; J. M. Barton, 1; Ap. Morgan Vance, 1; Donald MacLean, 1; Henry Beates, 4; John B. Deaver, 2; E. E. Montgomery, 5; Mordecai Price, 5; Harris A. Slocum, 1; W. C. Goodell, 1. I have received many others, but have been unable to use them, as they have been in one way or another somewhat more than simple exploration, at least as I have classified the list.

